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BRAKE HUGHES BELLERMANN LLP			PHAM, MICHAEL	
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P.O. BOX 52050			ART UNIT	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspto@brakehughes.com  
docketing@cpaglobal.com  
joe@brakehughes.com

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/559,513	SAUERMANN, VOLKER	
	<b>Examiner</b>	<b>Art Unit</b>	
	MICHAEL PHAM	2167	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 01 June 2009.

2a) This action is **FINAL**.                    2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-28 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1-28 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All    b) Some \* c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.

4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.

5) Notice of Informal Patent Application

6) Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/1/09 has been entered.

### ***Claim Status***

2. Claims 1-28 are pending.
3. Claims 1-28 have been examined.

### ***Claim Objections***

4. Prior claim 23-24 objections are withdrawn.
5. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: System and Method for Boolean expression Query Optimization.

### ***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claim 5 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 5 recites initializing the relationship vector as including a LESS THAN component, an EQUAL TO component and/or a GREATER THAN component. However, "and/or" is not disclosed.

***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

8. Claim 15 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claims fail to place the invention squarely within one statutory class of invention. On page 22 and 24 of the instant specification, applicant has provided evidence that applicant intends a "medium" to include "medium of digital data communication", see page 24. On page 22, it states "a computer program **tangibly embodied in an information**

**carrier, e.g. in a machine readable storage device or in a propagated signal".** As such, the claim is drawn to a form of energy. Energy is not one of the four categories of invention and therefore this claim(s) is/are not statutory. Energy is not a series of steps or acts and thus is not a process. Energy is not a physical article or object and as such is not a machine or manufacture. Energy is not a combination of Substances and therefor not a composition of matter. Applicant's are suggested to amend computer-readable medium to be "computer-readable storage medium".

9. Regarding claims 16-28, in particular claim 16, the claim recites a "processor" and "memory". In the absence of any modifying disclosure of this limitation in the specification, the examiner interprets the term 'processor' as limited to hardware embodiments; and the term 'memory' as excluding printed paper, transmission media, signals, or any form of energy, such that the claim clearly falls within a statutory class of invention as required under the terms of 35 U.S.C. 101.

#### ***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6439783 by Gennady Antoshenov (hereafter Antoshenov) further in view of U.S. Patent 5666528 by Lam H. Thai (hereafter Thai).

**Claim 1 :**

Antoshenkov discloses the following claimed limitations:

“receiving the Boolean expressions;”[col. 8 line 9, a query may be a Boolean expression. Accordingly, receiving the Boolean expressions (query) ]  
“decomposing the Boolean expression into the plurality of conditions;”[abstract, the query is converted to a Boolean tree in canonical form. Col. 8 lines 66-67, a Boolean tree which has been constructed from the following query: ((s1>21) and (s2=140000)) or not((s1<=30) or not(s2 >20000) or (s2/1000 <>s1)). Accordingly, decomposing (constructed) the Boolean expression (query) into the plurality of conditions (figure 4a and ((s1>21) and (s2=140000)) or not((s1<=30) or not(s2 >20000) or (s2/1000 <>s1)))]

“for each condition of the plurality, extracting from the condition at least one condition value referring to the attribute, wherein the at least one condition value defines a value range of the condition;”[ Col. 8 lines 66-67. Accordingly, for each condition of the plurality(((s1>21) and (s2=140000)) or not((s1<=30) or not(s2 >20000) or (s2/1000 <>s1))), extracting from the condition at least one condition value referring to the attribute (s1, s2), wherein the at least one condition value defines a value range of the condition (>21, =14000, <=30, etc.)]

“inserting the at least one condition value in a condition value list in sorted order;” [col. 7 lines 2-5, the results of the evaluation are placed in the range vector. The rank vector is sorted by the range values, and each range is given a rank number. Accordingly, inserting (placed) the at

least one condition value (range) in a condition value list (rank vector) in sorted order (sorted range values).]

“initializing a relationship vector for the at least one condition value; and”[figure 4b and figure 10]

“wherein each component in the relationship vector is a counter and initializing the relationship vector comprises setting the counter for each of the components to an initial value”

“adjusting the relationship vectors for the at least one condition value and for each further condition value that is in the condition list and that is in the value range of the condition.” [col. 7 lines 8-15. Accordingly, adjusting the relationship vectors (boolean tree is further optimized) for the at least one condition value (range) and for each further condition value (ranges) that is in the condition list (rank vector) and that is in the value range of the condition (range values)]

Antoshnev does not explicitly disclose "wherein each component in the relationship vector is a counter and initializing the relationship vector comprises setting the counter for each of the components to an initial value" and "adjusting the counters"

On the other hand, Thai discloses col. 10 lines 5-10, system still creates a bitmap; each bit is set equal to 1(i.e. it is assumed at the outset that all records meet the specified query condition). As the table is scanned, records determined to not meet the query condition are removed from the bitmask (e.g. their corresponding bit is toggled from 1 to 0).

Accordingly, disclosing wherein each component (bit) in the relationship vector (bitmap) is a counter (toggled 1 to 0; set equal to 1) and initializing the relationship vector comprises setting the counter for each of the components to an initial value (each bit is set equal to 1).

Accordingly, “adjusting the counters”(toggled 1 to 0; set to 1)

Both Antoshnev and Thai are within the same field of endeavor as applicant's invention. Antoshnev scanning and evaluating the record; however does not provide for storing any of the resulting true false condition for the record. Thai discloses a bitmap in order to further optimize a query by learning which records meet filtered conditions. It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to have applied Thai's disclosure above to Antoshnev's for the purpose of storing whether conditions records meet the filter condition, in doing so, improves upon Antoshnev's disclosure by having already learned optimization method for on-the-fly learning of records which meet filter conditions.

**Claim 2 :**

Antoshenkov discloses the following claimed limitations:“reducing the Boolean expression according to each relationship vector.” [col. 9 lines 17-23]

**Claim 3 :**

Antoshenkov discloses the following claimed limitations:“retrieving a maximum condition value and/or a minimum condition value of the condition.” [col. 7 lines 2-5]

**Claim 4 :**

Antoshenkov discloses the following claimed limitations: “retrieving an identity condition value of the condition.” [col. 6 lines 65-67]

**Claim 5 :**

Antoshenkov discloses the following claimed limitations: “initializing the relationship vector as including a LESS THAN component, an EQUAL TO component and/or a GREATER THAN component.” [col. 5 lines 56-58]

**Claim 6 :**

Antoshenkov discloses the following claimed limitations: “setting each relationship vector component for the at least one condition value to an initial value if the condition list has no further condition value;” [col. 5 lines 56-58 and col. 7 lines 2-5]

“setting each relationship vector component to the LESS THAN component value of the relationship vector for the next greater condition value in the condition value list; or”[col. 5 lines 56-58 and col. 7 lines 2-5]

“setting each relationship vector component to the GREATER THAN component value of the relationship vector for the next smaller condition value in the condition value list. “[col. 5 lines 56-58 and col. 7 lines 2-5]

**Claim 7 :**

Antoshenkov discloses the following claimed limitations: “incrementing at least one relationship vector component for the at least one condition value by an increment to reflect the condition; and”[col. 5 lines 35-40]

“propagating the increment through each relationship vector component for each further condition value in the condition list as long as the further condition value is within the value range of the condition.” [col. 6 lines 64-66]

**Claim 8 :**

Antoshenkov discloses the following claimed limitations: “identifying an AND-subset of condition values in the condition value list, where each subset condition value has at least one relationship vector component that has a value equal to the increment multiplied by the number of conditions in the plurality.”[col. 5 lines 55-64]

**Claim 9 :**

Antoshenkov discloses the following claimed limitations: “composing a reduced Boolean expression based on the AND-subset.” [col. 12 lines 53-56]

**Claim 10 :**

Antoshenkov discloses the following claimed limitations: “identifying an OR-subset of condition values in the condition value list, where each subset condition value has at least one relationship vector component with the initial value.”[figure 4A, element 421]

**Claim 11 :**

Antoshenkov discloses the following claimed limitations: “composing a reduced Boolean expression based on the OR-subset.” [col. 7 lines 12-16]

**Claim 12 :**

Antoshenkov discloses the following claimed limitations: “if the AND-subset is empty, sending a corresponding notification to a user”.[col. 6 lines 64-67]

**Claim 13 :**

Antoshenkov discloses the following claimed limitations: “if the OR-subset is empty, sending a corresponding notification to a user.” [col. 6 lines 64-67]

**Claim 14 :**

Antoshenkov discloses the following claimed limitations: “composing a reduced Boolean expression, where the reduced Boolean expression comprises a condition that merges at least a first condition and a second condition, the first and second conditions referring to the attribute and representing disjoint intervals, the attribute having no values between the inner interval boundaries of the disjoint intervals.” [col. 8 lines 52-64]

**Claim 15 :**

Antoshenkov discloses the following claimed limitations:

“receive the Boolean expression;” [col. 8 line 9, a query may be a Boolean expression.

Accordingly, receiving the Boolean expressions (query) ]

“decompose the Boolean expression into the plurality of conditions;” [abstract, the query is converted to a Boolean tree in canonical form. Col. 8 lines 66-67, a Boolean tree which has been constructed from the following query: ((s1>21) and (s2=140000)) or not((s1<=30) or not(s2 >20000) or (s2/1000 <>s1)). Accordingly, decomposing (constructed) the Boolean expression (query) into the plurality of conditions (figure 4a and ((s1>21) and (s2=140000)) or not((s1<=30) or not(s2 >20000) or (s2/1000 <>s1)))]

“for each condition of the plurality, extracting from the condition at least one condition value referring to the attribute, wherein the at least one condition value defines a value range of the condition;”[ Col. 8 lines 66-67. Accordingly, for each condition of the plurality(((s1>21) and (s2=140000)) or not((s1<=30) or not(s2 >20000) or (s2/1000 <>s1))), extracting from the condition at least one condition value referring to the attribute (s1, s2), wherein the at least one condition value defines a value range of the condition (>21, =14000, <=30, etc.)]

“for each condition of the plurality, extract from the condition at least one condition value referring to the attribute, wherein the at least one condition value defines a value range of the condition;” [ Col. 8 lines 66-67. Accordingly, for each condition of the plurality(((s1>21) and (s2=140000)) or not((s1<=30) or not(s2 >20000) or (s2/1000 <>s1))), extracting from the condition at least one condition value referring to the attribute (s1, s2), wherein the at least one condition value defines a value range of the condition (>21, =14000, <=30, etc.)]

“insert the at least one condition value in a condition value list in sorted order;” [col. 7 lines 2-5, the results of the evaluation are placed in the range vector. The rank vector is sorted by the range values, and each range is given a rank number. Accordingly, insert (placed) the at least one condition value (range) in a condition value list (rank vector) in sorted order (sorted range values).]

“initialize a relationship vector for the at least one condition value; and” [figure 4b and figure 10]

“adjust the relationship vectors for the at least one condition value and for each further condition value that is in the condition list and that is in the value range of the condition.” [col. 7 lines 8-15. Accordingly, adjust the relationship vectors (boolean tree is further optimized) for the at least one condition value (range) and for each further condition value (ranges) that is in the condition list (rank vector) and that is in the value range of the condition (range values)]

Antoshnev does not explicitly disclose "wherein each component in the relationship vector is a counter and initializing the relationship vector comprises setting the counter for each of the components to an initial value" and "adjusting the counters"

On the other hand, Thai discloses col. 10 lines 5-10, system still creates a bitmap; each bit is set equal to 1(i.e. it is assumed at the outset that all records meet the specified query condition). As the table is scanned, records determined to not meet the query condition are removed from the bitmask (e.g. their corresponding bit is toggled from 1 to 0).

Accordingly, disclosing wherein each component (bit) in the relationship vector (bitmap) is a counter (toggled 1 to 0; set equal to 1) and initializing the relationship vector comprises setting the counter for each of the components to an initial value (each bit is set equal to 1).

Accordingly, “adjusting the counters”(toggled 1 to 0; set to 1)

Both Antoshnev and Thai are within the same field of endeavor as applicant's invention. Antoshnev scanning and evaluating the record; however does not provide for storing any of the resulting true false condition for the record. Thai discloses a bitmap in order to further optimize a query by learning which records meet filtered conditions. It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to have applied Thai's disclosure above to Antoshnev's for the purpose of storing whether conditions records meet the filter condition, in doing so, improves upon Antoshnev's disclosure by having already learned optimization method for on-the-fly learning of records which meet filter conditions.

**Claim 16 :**

Antoshenkov discloses the following claimed limitations:

“a computing device having a memory to receive the Boolean expression and to store a condition value list; and” [col. 8 line 9, a query may be a Boolean expression. col. 7 lines 2-5, the results of the evaluation are placed in the range vector. The rank vector is sorted by the range values, and each range is given a rank number. Accordingly a computing device having a memory to receive the Boolean expression (query) and to store a condition value list (rank vector)]

“having at least one processor for executing computer program instructions to:

decompose the Boolean expression into the plurality of conditions;" [abstract, the query is converted to a Boolean tree in canonical form. Col. 8 lines 66-67, a Boolean tree which has been constructed from the following query:  $((s1>21) \text{ and } (s2=140000)) \text{ or not}((s1\leq30) \text{ or not}(s2>20000) \text{ or } (s2/1000 \text{ } \text{<>} \text{ } s1))$ . Accordingly, having at least one processor for executing computer program instructions to: decompose (constructed) the Boolean expression (query) into the plurality of conditions (figure 4a and  $((s1>21) \text{ and } (s2=140000)) \text{ or not}((s1\leq30) \text{ or not}(s2>20000) \text{ or } (s2/1000 \text{ } \text{<>} \text{ } s1)))$ ]

“for each condition of the plurality, extract from the condition at least one condition value referring to the attribute, wherein the at least one condition value defines a value range of the condition;” [ Col. 8 lines 66-67. Accordingly, for each condition of the plurality(((s1>21) and (s2=140000)) or not((s1<=30) or not(s2 >20000) or (s2/1000 <>s1))), extracting from the condition at least one condition value referring to the attribute (s1, s2), wherein the at least one condition value defines a value range of the condition (>21, =14000, <=30, etc.)]

“insert the at least one condition value in the condition value list in sorted order;” [col. 7 lines 2-5, the results of the evaluation are placed in the range vector. The rank vector is sorted by the range values, and each range is given a rank number. Accordingly, insert (placed) the at least one condition value (range) in a condition value list (rank vector) in sorted order (sorted range values).]

“initialize a relationship vector for the at least one condition value; and” [figure 4b and figure 10]

“adjust the relationship vectors for the at least one condition value and for each further condition value that is in the condition list and that is in the value range of the condition.” [col. 7 lines 8-15. Accordingly, adjust the relationship vectors (boolean tree is further optimized) for the at least one condition value (range) and for each further condition value (ranges) that is in the condition list (rank vector) and that is in the value range of the condition (range values)]

Antoshnev does not explicitly disclose "wherein each component in the relationship vector is a counter and initializing the relationship vector comprises setting the counter for each of the components to an initial value" and "adjusting the counters"

On the other hand, Thai discloses col. 10 lines 5-10, system still creates a bitmap; each bit is set equal to 1(i.e. it is assumed at the outset that all records meet the specified query condition). As the table is scanned, records determined to not meet the query condition are removed from the bitmask (e.g. their corresponding bit is toggled from 1 to 0).

Accordingly, disclosing wherein each component (bit) in the relationship vector (bitmap) is a counter (toggled 1 to 0; set equal to 1) and initializing the relationship vector comprises setting the counter for each of the components to an initial value (each bit is set equal to 1).

Accordingly, “adjusting the counters”(toggled 1 to 0; set to 1)

Both Antoshnev and Thai are within the same field of endeavor as applicant's invention. Antoshnev scanning and evaluating the record; however does not provide for storing any of the resulting true false condition for the record. Thai discloses a bitmap in order to further optimize

a query by learning which records meet filtered conditions. It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to have applied Thai's disclosure above to Antoshnev's for the purpose of storing whether conditions records meet the filter condition, in doing so, improves upon Antoshnev's disclosure by having already learned optimization method for on-the-fly learning of records which meet filter conditions.

**Claim 17 :**

Antoshenkov discloses the following claimed limitations: "wherein the at least one processor further executes computer program instructions to reduce the Boolean expression according to each relationship vector." [col. 9 lines 17-23]

**Claim 18 :**

Antoshenkov discloses the following claimed limitations: "wherein the relationship vector comprises a LESS THAN component, an EQUAL TO component, and a GREATER THAN component." [col. 5 lines 56-58]

**Claim 19 :**

Antoshenkov discloses the following claimed limitations: "a first portion to set each relationship vector component for the at least one condition value to an initial value if the condition list has no further condition value; and" [col. 5 lines 56-58 and col. 7 lines 2-5]  
"a second portion to set each relationship vector component to the LESS THAN component value of the relationship vector for the next greater condition value in the condition value lists or

to set each relationship vector component to the GREATER THAN component value of the relationship vector for the next smaller condition value in the condition value list.” [col. 5 lines 56-58 and col. 7 lines 2-5]

**Claim 20 :**

Antoshenkov discloses the following claimed limitations: “a first portion to increment at least one relationship vector component for the at least one condition value by an increment to reflect the condition; and” [col. 5 lines 35-40]  
“a second portion to propagate the increment through each relationship vector component for each further condition value in the condition list as long as the further condition value is within the value range of the condition.” [col. 6 lines 64-66]

**Claim 21 :**

Antoshenkov discloses the following claimed limitations: “wherein the memory stores an AND-subset of condition values in the condition value list, where each subset condition value has at least one relationship vector component that has a value equal to the increment multiplied by the number of conditions in the plurality.” [col. 5 lines 55-64]

**Claim 22 :**

Antoshenkov discloses the following claimed limitations: “wherein the at least one processor executes further computer program instructions to compose a reduced Boolean expression based

on the AND-subset.” [col. 12 lines 53-56]

**Claim 23 :**

Antoshenkov discloses the following claimed limitations: “wherein the memory stores an OR-subset of condition values in the condition value list, where each subset condition value has at least one relationship vector component with the initial value.” [figure 4A, element 421]

**Claim 24 :**

Antoshenkov discloses the following claimed limitations: ” wherein the memory stores an OR-subset of condition values in the condition value list, where each subset condition value has at least one relationship vector component with a value greater than the initial value.” [figure 4A, element 421]

**Claim 25 :**

Antoshenkov discloses the following claimed limitations: “wherein the at least one processor executes further computer program instructions to compose a reduced Boolean expression based on the OR-subset.” [col. 7 lines 12-16]

**Claim 26 :**

Antoshenkov discloses the following claimed limitations: “where the at least one processor executes further computer program instructions to send a corresponding notification to a user, if

the AND-subset is empty.” [col. 6 lines 64-67]

**Claim 27 :**

Antoshenkov discloses the following claimed limitations: “where the at least one processor executes further computer program instructions to send a corresponding notification to a user, if the OR-subset is empty.” [col. 6 lines 64-67]

**Claim 28 :**

Antoshenkov discloses the following claimed limitations: ”where the memory stores a list of all values of the attribute; and the at least one processor executes further computer program instructions to merge at least a first condition and a second condition, the first and second conditions referring to the attribute and representing disjoint intervals, the attribute having no values between the inner interval boundaries of disjoint intervals.” [col. 8 lines 52-64]

***Response to Arguments***

12. Applicant's arguments with respect to claims 1-28 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

13. The prior art made of record listed on pto-892 and not relied, if any, upon is considered pertinent to applicant's disclosure.

***Contact Information***

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL PHAM whose telephone number is (571)272-3924. The examiner can normally be reached on 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Cottingham can be reached on 571-272-7079. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. P./  
Examiner, Art Unit 2167

/John R. Cottingham/  
Supervisory Patent Examiner, Art Unit  
2167